

WHAT IS CLAIMED IS:

[c01] A method of protecting a light sensitive optical article, said method comprising a first step (A),

Step (A) comprising obtaining a plastic protective film, said film having two film surfaces, said film comprising at least one light absorbing compound selected from the group consisting of UV-Visible absorbers and yellow dyes;

and a second step selected from the group consisting of

Step (B) contacting one of said film surfaces with the optical article to be protected thereby providing an optical article in contact with a removable protective film; and

Step (C) forming an enclosure comprising said protective film and inserting the optical article to be protected therein.

[c02] The method according to claim 1, wherein said light sensitive optical article is selected from the group consisting of a DVD, an optical lens, a prism, an optical window, an optical wire, an optical switch, an optical wave guide, an optical display, and a light emitting diode.

[c03] The method according to claim 1, wherein said protective film transmits less than about 1 percent incident light having a wavelength between about 300 and about 450 nm.

[c04] The method according to claim 3, wherein said film has a thickness in a range between about 0.5 mil and about 100 mil.

[c05] The method according to claim 1, wherein said UV-visible absorber is selected from the group consisting of hydroxybenzophenones, benzotriazoles, cyanoacrylates, triazine, oxanilide derivatives, formamidines, cinnamates, malonate derivatives and combinations thereof.

[c06] The method according to claim 1, wherein said yellow dye is selected from the group consisting of 3-carboxy-5-hydroxy-1-p-sulfophenyl-4-p-sulfophenylazopyrazole trisodium salt, disodium salt of 1-(sulphophenylazo)-2-naphthol-6-sulphonic acid), monoazo derivatives, bisazo derivatives, quinoline derivatives, xanthene derivatives and combinations thereof.

[c07] The method according to claim 1, wherein said plastic protective film is selected from the group consisting of polyvinyl chloride, polyolefins, polyesters, polyurethanes, polyamides, polysulfones, polyimides, polyetherimides, polyphenylene ethers, polyphenylene sulfides, polyether ketones, polyether ether ketones, ABS resins, polyethersulfones, poly(alkenylaromatic) polymers, polybutadiene, acrylic polymers, polyacrylonitrile, polyacetals, polycarbonates, polyphenylene ethers, ethylene-vinyl acetate copolymers, polyvinyl acetate, liquid crystal polymers, ethylene-tetrafluoroethylene copolymer, aromatic polyesters, polyvinyl fluoride, polyvinylidene fluoride, polyvinylidene chloride, tetrafluoroethylene, and combinations comprising the foregoing resins.

[c08] The method according to claim 1, wherein said light absorbing compound is present at a level between 0.1 and about 5 percent by weight based on the total weight of said plastic protective film.

[c09] The method according to claim 1, wherein said contacting comprises applying an adhesive layer to one of two said film surfaces and thereafter joining the film to the light sensitive optical article such that the light sensitive optical article is in contact with said adhesive layer.

[c10] The method according to claim 9, wherein said adhesive layer comprises at least one adhesive material selected from the group acrylic, vinyl acrylic, styrene acrylic, urethane acrylic, butyl acrylate, acrylic emulsions, cross linked alkyl acrylic esters, rubber based adhesives selected from styrene-butadiene-styrene, epoxides, silicone based, silicone resins and combinations thereof.

[c11] A method of protecting a light sensitive limited use optical data storage device, said method comprising a first step,

Step (A) comprising obtaining a plastic protective film, said film having two film surfaces, said film comprising at least one light absorbing compound selected from the group consisting of UV-Visible absorbers and yellow dyes;

and a second step selected from the group consisting of

Step (B) contacting one of said film surfaces with the optical data storage device to be protected thereby providing a limited use optical data storage device in contact with a removable protective film; and

Step (C) forming an enclosure comprising said protective film and inserting the limited use optical data storage device to be protected therein.

[c12] The method according to claim 11, wherein said protective film transmits less than about 1 percent incident light having a wavelength between about 300 and about 450 nm.

[c13] The method according to claim 12, wherein said film has a thickness in a range between about 0.5 mil and about 100 mil.

[c14] The method according to claim 11, wherein said UV-visible absorber selected from a group consisting of hydroxybenzophenones, benzotriazoles, cyanoacrylates, triazine, oxanilide derivatives, formamidines, cinnamates, malonate derivatives and combinations thereof.

[c15] The method according to claim 11, wherein said yellow dye selected from a group consisting of 3-carboxy-5-hydroxy-1-p-sulfophenyl-4-p-sulfophenylazopyrazole trisodium salt, disodium salt of 1-sulphophenylazo-2-naphthol-6-sulphonic acid, monoazo derivatives, bisazo derivatives, quinolin derivatives, xanthene derivatives and combinations thereof.

[c16] The method according to claim 11, wherein said plastic protective film comprises at least one material selected from the group consisting of polyvinyl chloride, polyolefins, polyesters, polyurethanes, polyamides, polysulfones, polyimides, polyetherimides, polyphenylene ethers, polyphenylene sulfides, polyether

ketones, polyether ether ketones, ABS resins, polyethersulfones, poly(alkenylaromatic) polymers, polybutadiene, acrylic polymers, polyacrylonitrile, polyacetals, polycarbonates, polyphenylene ethers, ethylene-vinyl acetate copolymers, polyvinyl acetate, liquid crystal polymers, ethylene-tetrafluoroethylene copolymer, aromatic polyesters, polyvinyl fluoride, polyvinylidene fluoride, polyvinylidene chloride, tetrafluoroethylene, and copolymers thereof.

[c17] The method according to claim 11, wherein said light absorbing compound is present at a level between 0.1 and about 5 percent by weight based on the total weight of said plastic protective film.

[c18] The method according to claim 11, wherein said contacting comprises applying an adhesive layer to one of said two film surfaces and thereafter joining the film to the limited use optical data storage device such that the limited use optical data storage device is in contact with said adhesive layer.

[c19] The method according to claim 18, wherein said adhesive layer comprises at least one adhesive material selected from the group acrylic, vinyl acrylic, styrene acrylic, urethane acrylic, butyl acrylate, acrylic emulsions, cross linked alkyl acrylic esters, rubber based adhesives selected from styrene-butadiene-styrene, epoxides, silicone based, silicone resins and combinations thereof.

[c20] A method of protecting a light sensitive limited-play digital versatile disc, said method comprising a first step,

Step (A) comprising obtaining a plastic protective film, said film having two film surfaces, said film comprising at least one light absorbing compound selected from the group consisting of UV-Visible absorbers and yellow dyes;

and a second step selected from the group consisting of

Step (B) contacting one of said film surfaces with the limited-play digital versatile disc to be protected thereby providing a limited use optical data storage device in contact with a removable protective film; and

Step (C) forming an enclosure comprising said protective film and inserting the limited-play digital versatile disc to be protected therein.

[c21] The method according to claim 20, wherein said protective film transmits less than about 1 percent incident light having a wavelength between about 300 and about 450 nm.

[c22] The method according to claim 20, wherein said protective film transmits less than about 1 percent incident light having a wavelength between about 315 and about 400 nm.

[c23] The method according to claim 21, wherein said film has a thickness in a range between about 0.5 mil and about 100 mil.

[c24] The method according to claim 23, wherein said film has a thickness in a range between about 0.5 mil and about 50 mil.

[c25] The method according to claim 20, wherein said light absorbing compound is at least one UV-visible absorber selected from the group consisting of 2-(2'-hydroxy-5'-methylphenyl)benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-methylphenyl)-5-chlorobenzotriazole, 2-(3',5'-di-tert-butyl-2'-hydroxyphenyl)-5-chlorobenzotriazole, 2,2'-dihydroxy-4,4'-dimethoxybenzophenone, 2-(4,6-diphenyl-1,3,5-triazin-2-yl)-5-(hexyloxy-phenol, 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl-5-octyloxy)phenol, 2-(2'-hydroxy-5'-methylphenyl)benzotriazole, 2,4-dihydroxybenzophenone, 2,4,2',4'-tetrahydroxybenzophenone, 2-hydroxy-4-oxyloxybenzophenone, and 2-hydroxy-4-methoxybenzophenone.

[c26] The method according to claim 20, wherein said light absorbing compound is at least one yellow dye selected from the group consisting of 3-carboxy-5-hydroxy-1-p-sulfophenyl-4-p-sulfophenylazopyrazole trisodium salt, disodium salt of 1-(sulphophenylazo)-2-naphthol-6-sulphonic acid), monoazo derivatives, bisazo derivatives, quinoline derivatives, and xanthene derivatives.

[c27] The method according to claim 20, wherein said protective film is selected from the group consisting of poly(ethylene terephthalate), polycarbonate, poly(ethylene-*co*-vinyl alcohol).

[c28] The method according to claim 20, wherein said light absorbing compound is present in an amount corresponding to between about 0.5 and about 3 percent by weight based on the total weight of said plastic protective film.

[c29] The method according to claim 20, wherein said contacting comprises applying an adhesive layer to one of said two film surfaces and thereafter joining the film to the light sensitive limited-play digital versatile disc such that the light sensitive limited-play digital versatile disc is in contact with said adhesive layer.

[c30] The method according to claim 29 wherein said adhesive layer comprises at least one adhesive material selected from the group consisting of water-borne pressure sensitive adhesives, and solvent-based pressure sensitive adhesives.

[c31] A protected light sensitive optical article prepared by method of Claim 1.

[c32] A protected light sensitive optical article comprising

(a) a light sensitive optical device;

and

(b) a removable plastic protective layer.

[c33] The article according to claim 32, wherein said light sensitive optical device is an optical data storage device.

[c34] The article according to claim 32, wherein said light sensitive optical device is a limited play digital versatile disc.